UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	)
Dr. Jörg Rheims, et al.	) Group: 1731
Serial No.: 09/863,594	)
Filed: May 23, 2001	)
Title: A PROCESS AND A FLUFFER DEVICE	) Examiner: M. Alvo
FOR TREATMENT OF A FIBER STOCK	)
SUSPENSION	)

DECLARATION UNDER 37 C.F.R. 1.132

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Klaus Doelle declares that:

1. He is a co-inventor of and is familiar with the present United States patent application Serial No. 09/863,594 filed on May 23, 2001, entitled "A Process And A Fluffer Device For Treatment Of A Fiber Stock Suspension", and is familiar with the tests and development surrounding the invention thereof, and is familiar with the on-going prosecution of the patent application, including the Official Action dated July 27, 2004, and the prior art references cited in the Official Action.

2. He holds the positions of Research and Development Project Manager and Research and Development Project Coordinator for Fiber Systems Projects at the Research and Development Center of Product Coordination, Voith Fiber Systems, Ravensburg, Germany.

3. He received a degree of Doctor of Philosophy, Agricultural Engineering from the Department of Biological Systems Engineering, University of Wisconsin; Madison, Wisconsin in May 2002.

4. He has worked in the pulp and paper industry since 1985, first as a machine fitter apprentice at J.M Voith GmbH, with subsequent positions including Design and Development Engineer, Voith Paper Stock Preparation Division, Heidenheim Germany; Design and Development Engineer, Voith Paper, Inc. Fiber Systems Division, Appleton, WI; Development Engineer / Special Product Group Leader, Voith Paper Fiber Systems Division, Heidenheim and Ravensburg Germany; and Manager Research & Development Engineering, Voith Paper Inc. Fiber Systems, Appleton, WI.

5. He understands United States Patent 4,510,020 (Green et al) to use a variety of terms to describe the process that occurs during the lumen loading method disclosed therein, which is referred to as "impregnation" in Green et al.

6. He understands Green et al. to describe various additional steps that can be performed before or after the impregnation step.

7. He understands Green et al. to disclose that improved fiber loading is achieved "by increasing the intensity of the mechanical aspects of the impregnation step in the process."

8. He is familiar with various categories of equipment used in the preparation of cellulose and other fibers for the production of paper products, including equipment commonly referred to in the pulp and paper industry as refiners, disintegrators and fluffers. These different types of equipment are used to provide very different treatments of the pulp, and to develop and impact the pulp fibers in different ways.

9. A refiner is a device that puts significant energy into the pulp processed therein, with the result being alteration of physical properties of the pulp fibers. The primary effects of refining include:

- Breaking of and partial removal of primary and secondary cell walls.
- Internal fibrillation with water penetration, hydrogen bond breaking and fiber swelling.
- Cell wall collapse resulting in increased fiber flexibility.
- External fibrillation with loosening of fibrils and production of fines.
- Fiber shortening.

In addition to the primary effects of processing pulp in a refiner as stated above, secondary effects also occur, and include:

- Fractures in cell walls.
- Fiber stretching and compression.
- Partial solubilization of fiber components (hemi cellulose).
- Molecular fibrillation.
- Straightening of fibers at low consistency.
- Curling of fibers at high consistency.

As a result of the primary and secondary effects noted above, changes occur in pulp freeness, porosity, breaking length, and the like when pulp is treated in a refiner. These changes in pulp characteristics result in changes in physical properties of articles made from the pulp. Therefore, the process of treating pulp in a refiner changes the characteristics not only of individual fibers, but also of articles made from pulp stock containing the refined fibers.

10. A disintegrator is a device that also puts significant energy into stock processed therein, often for the purpose of breaking up and dispersing contaminates in the stock. One application of such a device is to release ink particles from recycled pulp fibers, breaking up and dispersing the ink particles. As a result of the significant amount of energy put into the stock, the effects on physical properties of pulp fibers from processing pulp in a disintegrator are similar to the effects from processing pulp in a refiner. Therefore, a disintegrator also alters characteristics of pulp stock containing the fibers, and characteristics of articles made from the pulp.

11. A fluffer is a device that puts only a minor amount of energy into the fibers processed therein, and is used primarily for the purpose of dispersing fiber bundles and separating fibers without significant alteration to the physical structure and properties of the individual fibers. Since little energy is put into the stock, physical alterations to individual pulp fibers and changes in characteristics of the pulp stock and products made therefrom are minimized.

12. Refiners and disintegrators substantially change individual fibers and alter characteristics of pulp stock containing the fibers. As a result, physical properties of products made from the pulp are changed when the pulp is treated in a refiner or a disintegrator. This is substantially different when the pulp is treated in a fluffer, which does not significantly change individual fibers.

13. The separation of fibers in a pulp slurry is sometimes referred to as "fluffing", and in this regard a refiner or disintegrator may be said to "fluff" pulp, since the highly aggressive nature of each device separates fiber bundles in addition to changing the physical structure and properties of the individual fibers. However, in contrast to treatment in a refiner or disintegrator, treatment in a fluffer; has the primary effect of only separating the fibers, without significant changes to the physical structure of individual fibers.

14. As a result of the above, treating pulp in a fluffer is different than treating pulp in a refiner or in a disintegrator. If the intent is to fluff pulp without significant alteration of the properties of the pulp, a refiner or disintegrator is not a suitable choice. Conversely, if the intent is a high energy treatment of pulp, a refiner or disintegrator can be used; however a fluffer is not a suitable choice since it performs a low energy, low intensity treatment.

15. Green et al. teaches that improved fiber loading is achieved "by increasing the intensity of the mechanical aspects of the impregnation step in the process." A refiner or a disintegrator is selected for the process of Green et al. because each puts significant energy

into the stock, thereby "increasing the intensity of the mechanical aspects of the impregnation step".

16. Using a fluffer in the process of Green at al is contrary to the teaching of Green et al because a fluffer provides minimal intensity to the mechanical aspects of the treatment, and as compared with a refiner or a disintegrator decreases the intensity of such treatment.

17. In the present invention, the fiber suspension and the additive therewith are treated in a fluffer so that the fibers are loaded with the additive, yet the physical characteristics of the fibers are not otherwise altered significantly. This allows for greater control of pulp characteristics in treatments either before or after the fiber loading step. The fiber loading step itself does not make these changes. The same control is not available if a refiner or a disintegrator is used for the fiber loading step, as taught by Green et al. In the teaching of Green et al the basic process of fiber loading also causes physical changes to the fibers, as a result of the high intensity treatment of the fibers. Even though a refiner or a disintegrator might be said to "fluff" pulp, each does so while also significantly changing physical characteristics of the pulp. Treatment in a fluffer does not have the same fiber changing result. Consequently, fiber loading with a refiner or disintegrator also changes the physical characteristics of the fibers, whereas fiber loading with a fluffer, as in the present invention, does not result in the same changes to physical characteristics of the individual fibers themselves.

18. I hereby declare that all statement s made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully submitted,

DATE: December 23rd, 2004